

## Graphene for Expandable Space Structures, Phase I

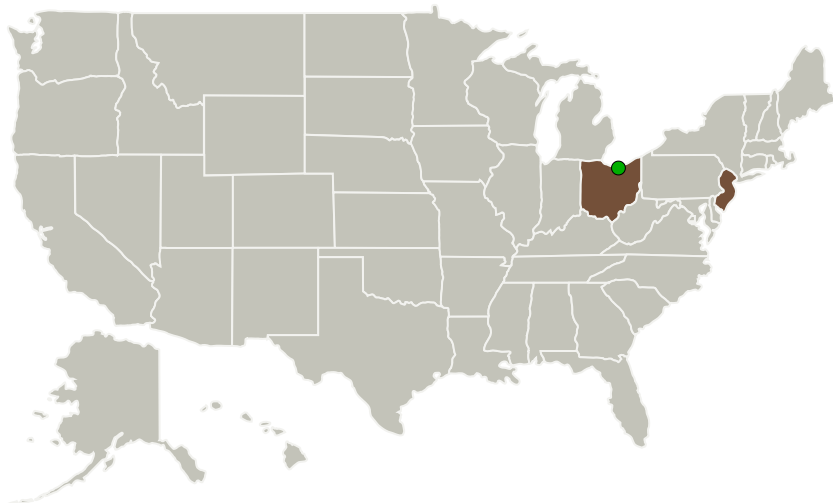
Completed Technology Project (2011 - 2011)




## Project Introduction

Graphene's tightly bonded impermeable single atomic layer of carbon offers unrivalled potential for lightweight flexible gas barrier applications. Graphene has been shown to be conductive, durable, flexible, and impermeable, ideal for wall material of inflatable space structures. SMI proposes to demonstrate the material as the principal material in impermeable gas/vacuum barrier fabrics for expandable space habitats and structures, and develop a low cost roll-to-roll production process. In Phase I, SMI produce 10x10cm graphene films and characterize them and refine the process for web production. SMI will also design a flexible, lightweight graphene-based multilayer barrier structure for space applications. In Phase II, the graphene roll-to-roll production will be developed and graphene-based flexible multi-layer impermeable barriers will be demonstrated.

## Primary U.S. Work Locations and Key Partners



Organizations Performing Work	Role	Type	Location
Structured Materials Industries, Inc.	Lead Organization	Industry	Piscataway, New Jersey
 Glenn Research Center(GRC)	Supporting Organization	NASA Center	Cleveland, Ohio



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## Primary U.S. Work Locations

New Jersey

Ohio

## Project Transitions

 **February 2011:** Project Start

 **September 2011:** Closed out

### Closeout Documentation:

- Final Summary Chart(<https://techport.nasa.gov/file/138186>)

## Organizational Responsibility

### Responsible Mission Directorate:

Space Technology Mission Directorate (STMD)

### Lead Organization:

Structured Materials Industries, Inc.

### Responsible Program:

Small Business Innovation Research/Small Business Tech Transfer

## Project Management

### Program Director:

Jason L Kessler

### Program Manager:

Carlos Torrez

### Principal Investigator:

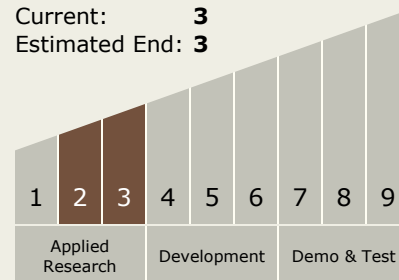
Bruce Willner

## Technology Maturity (TRL)

Start: **2**

Current: **3**

Estimated End: **3**



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## Technology Areas

### Primary:

- TX12 Materials, Structures, Mechanical Systems, and Manufacturing
  - └ TX12.1 Materials
    - └ TX12.1.3 Flexible Material Systems

## Target Destinations

The Sun, Earth, The Moon, Mars, Others Inside the Solar System, Outside the Solar System